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10/666,306

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EXAMINER

ROBERTS, BRIAN S

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/666,306

Applicant(s)

SMITH ET AL.

Examiner

BRIAN ROBERTS

Art Unit

2419

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-12,14-22,24-28,30 and 31 is/are pending in the application.
- 4a) Of the above claim(s) 33-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-12,14-22,24-28,30 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

- Claims 1-12 and 14-37 remain pending.
- Claims 33-37 have been withdrawn.

### ***Claim Objections***

Claim 31 is objected to because of the following informalities:

- Claim 31 lines 1-3 the limitation "A computer-readable storage medium having encoded thereon a plurality of computer-executable instructions for controlling a plurality of a network to perform the following steps" should read --A computer program embodied in a machine-readable medium, the computer program containing instructions for controlling a plurality of physical switches of a network to perform the following steps-- as was disclosed and supported in the original disclose.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14-22, 24-28, and 30-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable

one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

- In reference to claims 14, 30, 31

The limitation "extending a first data plane of the master switch to include a second data plane of the slave switch according to communication between the master switch and the slave switch via the virtual switch link protocol" fails to comply with the enablement requirement. The master switch and the slave switch are separate physical elements and the data plane of the master switch is not physically extended as implied by the limitation of the claim. The specification only supports logically extending a data plane of the master switch.

- In reference to claims 15-22, 24-28

Claims 15-22, 24-28 are rejected as being dependent on rejected independent claim 14.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 14, 24, 26-28 and 30-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Shinomiya. (US 2003/0037165)

- In reference to claims 14, 30, 31

In Figure 1, Shinomiya teaches a system and method for forming a virtual switch (3) from a plurality of physical switches in a network, the method includes configuring a first physical switch as a master switch (3-1) for controlling the virtual switch (3); configuring a second physical switch as a slave switch (3-2) under the control of the master switch, wherein the first physical switch (3-1) and the second physical switch (3-2) are redundant backups acting as distribution switches in a network; forming a virtual switch link for communication between the master switch (3-1) and the slave switch (3-2) causing the master switch (3-1) and the slave switch (3-2) to communicate via a virtual router redundant protocol (*virtual switch link protocol*); extending a first data plane of the master switch (3-1) to include a second data plane of the slave switch (3-2) according to communication between the master switch (3-1) and the slave switch (3-2) via the virtual router redundant protocol (*virtual switch link protocol*) and causing the master switch (3-1) and the slave switch (3-2) to act as a single virtual switch (3) when interacting with an access layer switch hub (2) (*access layer satellite switch*) coupled to both the master switch (3-1) and the slave switch (3-2), wherein virtual switch (3) is configured to include a destination port. (paragraphs [0043-0046])

- In reference to claim 24

In Figure 1, Shinomiya further teaches forming the virtual switch link from a plurality of physical links acting as a single logical link. (paragraphs [0182-0186])

- In reference to claim 26

In Figures 9A-9C, Shinomiya further teaches updating layer 2 forwarding tables in the master chassis (3-1); updating layer 2 forwarding tables in the slave chassis (3-2); and correcting inconsistencies between the layer 2 forwarding tables in the master chassis (3-1) and the layer 2 forwarding tables in the slave chassis (3-2) via updating the forwarding tables in each chassis. (paragraphs [0090-0096]).

- In reference to claim 27

In Figure 2, Shinomiya further teaches forming the virtual switch link comprises combining the data virtual switch link and the control virtual switch link on a single physical link. (paragraphs [0047-0048])

- In reference to claim 28

In Figures 9A-9C, Shinomiya further teaches updating layer 2 forwarding tables in the master chassis (3-1); updating layer 2 forwarding tables in the slave chassis (3-2); and correcting inconsistencies between the layer 2 forwarding tables in the master chassis (3-1) and the layer 2 forwarding tables in the slave chassis (3-2) according to frames transmitted on the data virtual switch link. (paragraphs [0090-0096])

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6, 8-11, and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya. (US 2003/0037165) in view of Yamaya et al. (US 2002/0184387), and further in view of Walsh et al. (US 2002/0099972).

- In reference to claim 1

In Figure 14, Shinomiya teaches a virtual switch (3) for a network, the virtual switch (3) includes a master chassis (3-1) comprising a second master distribution switch port configured to communicate with a switch hub (2) (*first satellite switch*); and a third master distribution switch port configured to communicate with the network inherently containing core switches; and the slave chassis (3-2) comprising; a second master distribution switch port configured to communicate with a switch hub (5 Figure 7) (*second satellite switch*); and a third master distribution switch port configured to with the network inherently containing core switches wherein the master chassis (3-1) and the slave chassis (3-2) communicate according to virtual router redundant protocol (*virtual switch link protocol*) for logically extending a data plane of the master chassis (3-1) to that of the slave chassis (3-2). (paragraphs [0043-0046])

Shinomiya does not teach the master chassis (3-1) having a first master distribution switch port configured for communication with the slave chassis (3-2) over a virtual switch link or the slave chassis (3-2) having a first slave distribution switch port configured for communication with the master chassis (3-1) over a virtual switch link.

In Figure 1, Yamaya et al. teaches a virtual switch link (1) connecting a first router (10) having a port configured for communicating with a second router (11) of a virtual router. The first router (10) has a port configured for communicating with a port of the second router (11). (paragraphs 0045-0046)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system of Shinomiya to include a the master chassis (3-1) having a first master distribution switch port configured for communication with the slave chassis (3-2) over a virtual switch link or the slave chassis (3-2) having a first slave distribution switch port configured for communication with the master chassis (3-1) over a virtual switch link as suggested by Yamaya et al. because it allows the master chassis and the slave chassis to be directly to reduce a transmission time of messages sent between the master chassis and the slave chassis.

The combination of Shinomiya and Yamaya et al. does not explicitly teach that the master chassis (3-1) comprises a first plurality of linecards; and a master supervisor card for controlling the first plurality of linecards and that the slave chassis (3-2) under the control of the master supervisor card comprises a second plurality of linecards; and a slave supervisor card.



In Figure 1, Walsh et al. teaches a router with a first plurality of linecards (108a); and a master supervisor card (102a) for controlling the first plurality of linecards and a second plurality of linecards (108b); and a slave supervisor card (102b). (paragraph [0027])

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the master chassis of the combination of Shinomiya and Yamaya et al. to include a first plurality of linecards; and a master supervisor card for controlling the first plurality of linecards as taught by Walsh et al. and modify the slave chassis (3-2) of the combination of Shinomiya and Yamaya et al. to include a second plurality of linecards; and a slave supervisor card as taught by Walsh et al. because it allows each chassis in the virtual switch to receive data over input communication links and forward data over output communication links as well as change from utilizing the master chassis to the slave chassis in case there is failure of the master chassis.

- In reference to claim 4

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim. In Figure 2, Shinomiya further teaches the virtual switch link comprises a plurality of physical links combined to form a logical link. (paragraphs [0047-0048])

- In reference to claim 6

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim. In Figures 9A-9C, Shinomiya further teaches the virtual switch link is used to synchronize routing tables (32) of the master chassis (3-1) and the slave chassis (3-2). (paragraphs [0090-0096])

- In reference to claim 8

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim. In Figure 1, Shinomiya further teaches the data virtual switch link extends an internal chassis data plane to communication between the master chassis (3-1) and the slave chassis (3-2). (paragraphs [0045-0046])

- In reference to claim 9

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim. In Figure 1, Shinomiya further teaches the master supervisor communicates with the slave supervisor via inband messaging on the control virtual switch link. (paragraphs [0045-0046])

- In reference to claim 10

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim. In Figure 7, Shinomiya further teaches the control virtual switch link is brought on-line first and is used to determine which chassis will be the master chassis (3-1). (paragraph [0076-0079])

- In reference to claim 11

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim. In Figure 2, Shinomiya further teaches a single physical link combines the control virtual switch link and the data virtual switch link. (paragraphs [0047-0048])

- In reference to claims 5, 15-18, 22

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim.

While the combination of Shinomiya, Yamaya et al., and Walsh et al. does not explicitly teach that the virtual switch link protocol comprises a field indicating whether a packet has traversed the virtual switch link, a source port identifier, a destination port index, and source flood information, VLAN information, or data plane priority information, the admitted prior art teaches that the above fields are known in the art and are utilized to coordinate the transfer of packets between network elements and for configuration of the network elements.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Shinomiya, Yamaya et al., and Walsh et al. to include a field indicating whether a packet has traversed the virtual switch link, a source port identifier, a destination port index, source flood information, or VLAN information in a packet between Router A and Router B because it allows the coordination of load balancing between the respective routers and provides for the routing of packets by a backup router if a master router fails.

- In reference to claims 19-21

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that covers substantially all limitations of the parent claim.

While the combination of Shinomiya, Yamaya et al., and Walsh et al. does not explicitly teach utilizing a virtual switch link protocol to determine whether an access control list should be applied to a frame, whether a QoS designation should be applied to a frame, or whether a frame is a MAC notification frame, the admitted prior art teaches the above fields are known in the art and are utilized to coordinate the transfer of packets between network elements and for configuration of the network elements.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Shinomiya, Yamaya et al., and Walsh et al. to include utilizing a virtual switch link protocol to determine whether an access control list should be applied to a frame, whether a QoS designation should be applied to a frame, or whether a frame is a MAC notification frame, between

Router A and Router B because it allows the coordination of load balancing between the respective routers and provides for the routing of packets by a backup router if a master router fails.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya (US 2003/0037165) in view of Goodrum et al. (US 5822512)

- In reference to claim 25

Shinomiya teaches a system and method that covers substantially all limitations of the parent claim.

Shinomiya does not explicitly teach that the virtual switch link comprises a control virtual switch link and a data virtual switch link.

Goodrum et al. teaches a method of out of band signaling where the control and data are transmitted on separate links between a backup and main server. (column 1 line 30-39)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Shinomiya to include a separate data link and control link as suggested by Goodrum et al. because it provides a fault tolerant system between the data and control data so that if a fault occurs on one of the links, the other link still may function and transmit/receive either the data or control data.

Claims 3, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya (US 2003/0037165) in view of Yamaya et al. (US 2002/0184387), in

view of Walsh et al. (US 2002/0099972), as applied to the parent claims, and further in view of Goodrum et al. (US 5822512).

- In reference to claims 3, 7, 12

The combination of Shinomiya, Yamaya et al., and Walsh et al. teaches a system and method that teaches substantially all limitations of the parent claims.

The combination of Shinomiya, Yamaya et al., and Walsh et al. does not explicitly teach that the virtual switch link comprises a control virtual switch link and a data virtual switch link.

Goodrum et al. teaches a method of out of band signaling where the control and data are transmitted on separate links between a backup and main server. (column 1 line 30-39)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of the combination of the combination of Shinomiya, Yamaya et al., and Walsh et al. to include a separate data link and control link as suggested by Goodrum et al. because it provides a fault tolerant system between the data and control data so that if a fault occurs on one of the links, the other link still may function and transmit/receive either the data or control data.

### ***Response to Arguments***

Applicant's arguments filed 06/02/2008 have been fully considered but they are not persuasive.

- On pg 9-12 of the Remarks with regard to the independent claims 1, 14, 30, and 31, the Applicant contends that Shinomiya fails to teach or suggest extending a first data plane of the master switch to include a second data plane of the slave switch according to communication between the master switch and the slave switch via the virtual switch link protocol.
- The Examiner respectfully disagrees. As shown in Figure 1, Shinomiya teaches implementing a virtual router (3) comprised of Router A (3-1) and Router B (3-2) utilizing Virtual Router Redundant Protocol. The data plane of the virtual router comprises the data plane of Router A and the data plane of Router B. Virtual Router Redundant Protocol provides for that in the event of failure of a master router, the data plane of the master router is logically extended to include the data plane of a backup router. Thus, Virtual Router Redundant Protocol logically extends the data plane of Router A to include the data plane of Router B, and likewise, Virtual Router Redundant Protocol logically extends the data plane of Router B to include the data plane of Router A according to which router is designated as the master router. It is this data plane extension that allows the virtual router to have a common address and appear as single router to outside network elements. Thus by virtue of Shinomiya teaching implanting a virtual router (3) utilizing Virtual Router Redundant Protocol, Shinomiya meets the limitation of logically extending a first data plane of the master switch to include a second data

plane of the slave switch according to communication between the master switch and the slave switch via the virtual switch link protocol.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN ROBERTS whose telephone number is (571)272-3095. The examiner can normally be reached on M-F 10:00-7:30.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BSR/  
05/05/2008

/Hong Cho/  
Primary Examiner, Art Unit 2419